

Claims

1. Drug release system, comprising a shape memory material (SMP-material) and at least one drug.
2. Drug release system according to claim 1, wherein the SMP-material has one or more shapes in memory.
3. Drug release system according to any of the preceding claims, wherein the SMP-material is biostable or biodegradable.
4. Drug release system according to any of the preceding claims, wherein the shape memory effect is used for the variation of the drug release rate.
5. Drug release system according to any of the preceding claims, wherein the shape memory effect is employed for the minimal invasive implantation of a drug release system.
6. Drug release system according to any of the preceding claims, wherein the shape memory effect is triggered by a change in temperature, light, or a combination thereof.
7. Drug release system of any of the preceding claims, wherein the drug release system is a matrix system, wherein said at least one drug is dispersed within the matrix.
8. Drug release system according to claim 7, wherein the drug release system displays a change of the drug release rate after triggering of the shape memory effect.
9. Drug release system according to any of claims 7 or 8, wherein the SMP-material comprises units, derived from caprolactone, lactide, glycolide and dioxanone.

10. Drug release systems according to any of claims 7 to 10, wherein the drug release system comprises a coating, for modification of the release properties and/or tissue compatibility.
11. Drug release system according to claim 7, wherein the drug release system is present in laminate form, comprising at least one drug containing film made from a SMP-material, wherein this film is laminated on both surfaces with films not containing a drug.
12. Drug release system according to any of claims 1 to 3, wherein the drug release system comprises a reservoir of drug and a coating and/or membrane made from a SMP-material.
13. Drug release system according to claim 12, wherein the SMP-material, after triggering of the shape memory effect, controls the rate of release of the drug.
14. Drug release system according to any of claims 1 to 3, wherein the drug release system comprises a reservoir for the drug made from a SMP-material, and a coating and/or membrane.
15. Drug release system according to claim 14, wherein the shape memory effect is employed for inducing a change in shape of the reservoir, leading to a variation of the permeability of the coating and/or membrane with respect to the drug.
16. Drug release system according to any of claims 1 to 3, wherein the hydrolytic degradation of the shape memory material controls the drug release.
17. Drug release system according to any of the preceding claims, wherein the drug is a low molecular weight or high molecular weight, a hydrophilic or hydrophobic drug.
18. Drug release system according to any of the preceding claims, wherein the drug release system is provided in the form of a coating on an implant.

19. Drug release system according to any of the preceding claims, wherein the drug release system is present in the form of nano-particles, micro-particles, films, threads, compositions for transdermal drug administration.
20. Method for preparing a drug release system according to any of the preceding claims, comprising the dissolution of a drug in a suitable solvent, introducing a shape memory networks into the solution and swelling of the network in the presence of the drug solution and withdrawing the swollen network from the solution.
21. Method for the preparation of a drug release system according to any of the preceding claims, comprising the crosslinking of prepolymers in the presence of a drug.
22. Method according to claim 21, wherein the drug is dissolved or dispersed in the mixture to be crosslinked.
23. Use of a drug release system according to any of claims 1 to 19 for the preparation of a medicament enabling a controlled drug release.